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conjunction with, the well-known treatise of Thomson and Tait.

ERNEST W. BROWN.

#### DISCUSSION AND CORRESPONDENCE.

##### ON THE SPELLING OF 'CLON.'

TO THE EDITOR OF SCIENCE: The original orthography of 'clon' should be retained, in the opinion of the present writer, for the following reasons: '*Clone*,' the form preferred by Mr. Pollard (SCIENCE, XXII., p. 87), is already in use as a medical term, and is of different origin and significance from *clon*! If the latter word should take final *e* in order to mark an omega sound in the original, so also should *eon*, *pæon*, *autochthon*, *halcyon* and similar words in common use.

Linguistic usage does not require, however, that loan-words and derivatives from other languages should always preserve the same vowel quantities, and in transliteration from the Greek no distinction is made between the long and short sounds of *o* and *e*. In fact,  $\eta$  and  $\omega$  were unknown until the introduction of scholastic writing, and remained long afterwards confused with  $\epsilon$  and  $\omicron$ . Final *e* in English derivatives may stand for a distinct syllable in the original, as in the other examples given by Mr. Pollard, or may be added for euphony, but not for the sole purpose of indicating quantity. Sometimes the final vowel is arbitrarily syncopated, whence the resulting variants of metaphor and semaphore, plasm and plasma, hypogyn and hypocrite, rhyme and rhythm, etc.; or we may even write both synonym and synonyme, though the latter form is antiquated.

Scarcely germane to this matter, but suggested by it, is the popular habit of miscalling under a variety of un-English names one of the most famous masterpieces of Greek art. When we say 'Milo,' we are merely following the continental pronunciation of Melos, in which the final *s* is no longer sounded. *Venus de Milo* is the French name of the statue, Aphrodite of Melos the correct English name. The most unpardonable combination of all is 'Venus of Milo,' with the long (English) sound of the *i* in Milo; for in the first place,

the Italian goddess is not the precise equivalent of Aphrodite, and in the second place there is no such geographical name as 'Milo,' at least, not in Greece. C. R. EASTMAN.

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#### SPECIAL ARTICLES.

##### THE LAWS OF EVOLUTION.

THAT account of universal evolution which we owe to Mr. Herbert Spencer may be supplemented by a formulation of certain quantitative laws which Mr. Spencer seems not to have apprehended. Mr. Spencer's own so-called 'Law of Evolution' is in reality only a great generalization, and not in a stricter sense of the word a law at all. It tells us that everywhere the loss and redistribution of the internal motion of a finite aggregate are accompanied by the concentration or 'integration' of mass, a 'differentiation' of arrangements, forms and activities, and a 'segregation' or drawing together of like units. It does not tell us anything about the rate or amount of 'compound evolution' to be expected from any given expenditure of energy under given conditions.

Economists have long been familiar with certain laws of differential cost and gain. They are commonly called laws of increasing and of diminishing return. The usual statement of them in the text-books is inadequate. A more accurate, and possibly a sufficient, statement is, that in any given state of industry and the arts, an increasing outlay of labor and capital in agricultural, manufacturing, or commercial operations conducted upon a given area,<sup>1</sup> will, up to a given limit, yield returns increasing faster than the outlay, and will, beyond that limit, yield returns increasing less rapidly than the outlay.

In the course of my sociological studies I have been led to believe that increasing and diminishing returns, within the realm of economic phenomena, are only special cases of relations that hold good throughout all phenomena, physical, chemical, biological, psychological and social. In a future publication I hope to set forth the grounds of this

<sup>1</sup> Observe, *space* not 'land.'